



# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Applicant's or agent's file reference<br>G69621.LF.sgh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>FOR FURTHER ACTION</b> See Form PCT/PEA/416                                                                                                                                |                                                       |
| International application No.<br>PCT/EP2005/055466                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | International filing date ( <i>day/month/year</i> )<br>21.10.2005                                                                                                             | Priority date ( <i>day/month/year</i> )<br>07.02.2005 |
| International Patent Classification (IPC) or national classification and IPC<br>INV. B05B11/00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                               |                                                       |
| Applicant<br>Lumson S.p.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                               |                                                       |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i>) a total of <u>3</u> sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |                                                                                                                                                                               |                                                       |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                               |                                                       |
| Date of submission of the demand<br><br>2006-05-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Date of completion of this report<br><br>25.05.2007                                                                                                                           |                                                       |
| Name and mailing address of the international preliminary examining authority:<br><br> European Patent Office - P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk - Pays Bas<br>Tel. +31 70 340 - 2040 Tx: 31 651 epo nl<br>Fax: +31 70 340 - 3016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Authorized officer<br><br>Brévier, François<br><br>Telephone No. +31 70 340-2816<br><br> |                                                       |

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/055466

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3(a) and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4(a))
    - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

|           |                                                  |
|-----------|--------------------------------------------------|
| 1, 2, 4-8 | as originally filed                              |
| 3         | received on 26.05.2006 with letter of 23.05.2006 |

**Claims, Numbers**

1-6 as amended (together with any statement) under Art. 19 PCT

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☒ the claims, Nos. 1, 2
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,  
☒ claims Nos. 3, 4

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*).
- ☒ no international search report has been established for the said claims Nos. 3, 4
- ☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:
- ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
- ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
- ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b) and 13*ter*.2.
- ☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions, and such tables were not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

|                               |             |                   |
|-------------------------------|-------------|-------------------|
| Novelty (N)                   | Yes: Claims |                   |
|                               | No: Claims  | <u>1, 2, 5, 6</u> |
| Inventive step (IS)           | Yes: Claims |                   |
|                               | No: Claims  | <u>1, 2, 5, 6</u> |
| Industrial applicability (IA) | Yes: Claims | <u>1, 2, 5, 6</u> |
|                               | No: Claims  |                   |

2. Citations and explanations (Rule 70.7):

see separate sheet

**Re Item I.**

**Basis of the report**

The amended claims 1, 2 filed with the letter dated 13-04-2006 introduce subject-matter which goes beyond the disclosure of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned are the following:

-Claim 1: "... as the only material into a container....".

-Claim 2: "... being usable as the only material to be introduced into a container.....".

No support for such amendments have been found in the application as filed.

These amendments have been considered as not being made for the purpose of the present International Preliminary Examination in accordance with Rule 70.2© PCT.

**Re Item III.**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The subject-matter of amended independent claims 3, 4 is not present in the claims of the originally filed application and has therefore not been searched.

These claims cannot therefore be the subject of the present International Preliminary Examination.

**Re Item V.**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1 Reference is made to the following document:

D1 : GB 1 537 436 A (TOYO AEROSOL IND CO LTD) 29 December 1978

2 INDEPENDENT CLAIMS 1, 2

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 2 is not new in the sense of Article 33(2) PCT.

Document D1 (see passages quoted in the International Search Report) discloses (the references in parentheses applying to this document):

*A mixture to be introduced ~~as the only material~~ into a container having a dispensing pump sealedly mounted thereon, whereby such mixture comprises at least one low-boiling liquid having a saturated vapour pressure less than 1.00 kg/cm<sup>2</sup> at 15°C and less than 2.8 kg/cm<sup>2</sup> at 37.8°C, and at least a fluid product to be dispensed by said pump.*

- 2.2 A "low-boiling liquid" and a "vapour" (i.e. a gaseous substance which, at room temperature and pressure, can also exist in liquid form) are two different phases of the same substance.

D1 discloses air-tight vessels filled with material to be sprayed and such a vapour. In test n°/3 (p. 4, l. 19-22) the gaseous substance comprises isopentane which is known as having a saturated vapour pressure less than 1.00 kg/cm<sup>2</sup> at 15°C and less than 2.8 kg/cm<sup>2</sup> at 37.8°C.

This is also acknowledged by the applicant since isopentane is one of the possible "low-boiling liquids" mentioned in dependent claim 6.

It is well known that a vapour (or low-boiling liquid) kept in a confined space reaches an equilibrium state where liquid and gas phases coexist. The saturated vapour pressure is by definition the pressure exerted by the molecules in the vapour at the point of equilibrium.

It is thus clear that in the closed vessel of test n°/3 of D1, a liquid phase of isopentane exists which mixes (at least partially) with the material to be sprayed, thereby forming a mixture according to claim 1 or claim 2.

- 3 D1 seems also to disclose (implicitly or explicitly) the subject matter of claims 3 and 4.

The spraying device by which the vessel is closed is a pumping device having a piston for pressurising and spraying the material.

The low-boiling liquids are used in D1 for balancing the pressure in air-tight vessels.

#### 4 DEPENDENT CLAIMS 5, 6

Dependent claims 5 and 6 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

CLAIMS

1. Mixture to be introduced as the only material into a container having a dispensing pump sealedly mounted thereon, characterized in that such mixture  
5 comprises at least one low-boiling liquid having a saturated vapour pressure less than 1.00 kg/cm<sup>2</sup> at 15°C and less than 2.8 kg/cm<sup>2</sup> at 37.8°C, and at least a fluid product to be dispensed by said pump.
2. A mixture of at least one low-boiling liquid  
10 having a saturated vapour pressure less than 1.00 kg/cm<sup>2</sup> at 15°C and less than 2.8 kg/cm<sup>2</sup> at 37.8°C, and of at least a fluid product to be dispensed by said pump, the mixture being usable as the only material to be introduced into a container on which  
15 said pump is sealedly mounted.
3. A container having a dispensing pump sealedly mounted on it, said container containing, as the only material introduced into it, a mixture of at least one low-boiling liquid having a saturated  
20 vapour pressure less than 1 Kg/cm<sup>2</sup> at 15°C and less than 2.8 Kg/cm<sup>2</sup> at 37.8°C and of at least a fluid product dispensable by said pump, said low-boiling liquid being used for compensating the volume of the product delivered by said pump and for  
25 rebalancing the pressure in the container

26-05-2006

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hermetically sealed by the pump.

4. A process for the preparation of a container of a product dispensable by a delivery pump sealedly mounted on said container, characterized in that  
5 only at least one low-boiling liquid having a saturated vapour pressure less than  $1.00 \text{ kg/cm}^2$  at  $15^\circ\text{C}$  and less than  $2.8 \text{ Kg/cm}^2$  at  $37.8^\circ\text{C}$  is introduced into said container in addition to said product.

10 5. Mixture according to claims 1 to 4, characterized in that it contains from 3% to 97% b.w. of said low-boiling liquids.

6. Mixture according to claim 1 to 5, characterized in that said low-boiling liquid is selected from  
15 the group consisting of isopentane, isohexane, N-pentane, N-hexane, dichloromethane, monochloropopane, 1-1-dichloroethane, 2-chlorobutane, trichloro-fluoro-methane CFC 11, trichloro-trifluoro-ethane CF 113, ethyl ether,  
20 methylene-dimethylether, dimethoxymethane and acetone.



It is an object of the present invention to provide mixtures of products dispensable by a pump sealedly mounted on a container of the product, without making any use of propellant gases, while getting, however, the same favourable performances which are presently obtained only by aerosol dispensing systems.

Another object is to enable very cheap and simple technologies for filling the sealed containers with the products to be dispensed.

Pumps suitable to be used on the sealed container are, for example, disclosed in EP-A-0086144; US-A-3,221,346; GB-A-1537<sup>43</sup>~~346~~ and US-A-4,511,609 whose teachings are herewith incorporated by reference.

The objects of the present invention are attained by a mixture of products dispensable by pumps sealedly mounted on containers of such products, characterized in that such mixture comprises at least one low-boiling liquid having a saturated vapour pressure less than 1.00 kg/cm<sup>2</sup> at 15°C and less than 2.8 kg/cm<sup>2</sup> at 37.8° C.

Such low boiling liquids within the closed containers develop a low pressure on whose valve the temperature changes have a low influence, thus having no affect on the pump functionality.

Low-boiling liquids are considered to be all those products which at 15°C possess or develop a vapour pressure less than 1.00 kg/cm<sup>2</sup> according to the definition given in the GAS Encyclopaedia by Louis Neel (Nobel prize for physics, published by AIR LIQUIDE), and which develop pressures less than 2.8 kg/cm<sup>2</sup> at 37.8°C (IATA regulations for air transport, Section X, Explanation of Articles and Terminology): low boiling liquids are products which have a boiling point ranging between +15° and 85 °C at ambient ~~temperature~~ **PRESSURE** (about 760 mm/Hg).